

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	
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Wang et al.	:	
	:	
Application No. 10/669,263	:	Art Unit: 1764
	:	
Filed: Sep 25, 2003	:	Examiner: Basia Ridley
	:	
For: CATALYSTS REACTORS AND	:	
METHODS OF PRODUCING	:	Atty Docket: 12859B-DIV
HYDROGEN VIA THE WATER-	:	
GAS SHIFT REACTION	:	

**DECLARATION PURSUANT TO 37 CFR § 1.132**

1. I, Richard Long, am knowledgeable about the dehydrogenation of alkanes at high temperatures in the presence of steam, as well as catalyst compositions for catalyzing this reaction. My educational background includes BS in 1992 and Ph. D in 1997, both in chemistry department at Xiamen University (China). After that, I worked as a senior research fellow at the University of Michigan, chemical engineering department before I joined Velocys Corporation in 2001. My research interest is catalysis, inorganic materials and physical chemistry. My work experience, related to the dehydrogenation of alkanes at high temperatures in the presence of steam, includes ethane steam cracking, oxidative dehydrogenation of ethane, oxidative dehydrogenation of ethylbenzene and oxidative coupling of methane to ethylene.

2. My employer, Velocys Corporation, has licensing rights in the captioned application.

3. Based on my education and experience, I think that, in 2001, it would not have been obvious to use a high surface area zirconia catalyst support for catalyzing the dehydrogenation of alkanes at high temperatures in the presence of steam. This is because it was known that under conditions of 1100 F to 1250 F, and steam to hydrocarbon ratios of 0.5:1 to 30:1 (preferably 2.5:1), zirconia loses surface area dramatically and can undergo a phase change from monoclinic to tetrahedral. Therefore, it would not have been obvious to use a zirconia support with a BET surface area greater than 10 m<sup>2</sup>/g.

4. I declare that all of the above statements made of my own knowledge are true and all statements made on information and belief are believed to be true. I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. §1001), and may jeopardize the validity of the application or any patent issuing thereon.

Date: 6/29/07

By: Richard Long  
Richard Long